



**Evaluation of the probability of
interruption, as established in the
Commission Regulation (EU)
2017/460, 16th March**

**VIP Ibérico and
High-pressure Network / LNG
Terminal Interconnection**

Gas Year 2026/2027

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1 Framework

The publication of Commission Regulation (EU) 2017/460 of 16th March 2017 establishing a network code on harmonised transmission tariffs structures for gas (Tariff Network Code) has defined, among others, the rules for the calculation of reserve prices for standard capacity products for interruptible capacity. In particular, Article 16 (1) specifies that reserve prices for standard capacity products for interruptible capacity should be calculated by applying a discount to the reserve prices of their respective firm standard capacity products, according to the following formula¹:

$$Discount_{ex-ante} = Pro \times A \times 100\% \quad (1)$$

- (Pro) – probability of interruption;
- (A) – adjustment factor, applied to reflect the estimated economic value of the type of standard capacity product for interruptible capacity.

Additionally, Article 174 (13) of the Portuguese Tariff² Regulation for the gas sector regarding the information to be delivered to the NRA, foresees that, for the establishment of the prices to be applied to standard capacity products for interruptible capacity for the use of the high-pressure network, the transmission system operator must provide to the NRA, on an annual basis, the evaluation of the probability of interruption, according to the above-mentioned Commission Regulation. This assessment shall include:

- 1) a list of all types of standard capacity products for interruptible capacity offered, including the respective probability of interruption and level of discount to be applied;
- 2) an explanation on how the probability of interruption is calculated for each type of product;
- 3) the data used to calculate the probability of interruption.

Regarding the prices for standard capacity products for interruptible capacity, according to Article 154 (2) of the Portuguese Tariff Regulation, the transmission system operator shall also suggest a value for parameter A, the adjustment factor that reflects the estimated economic value for each of these products, as also mentioned in Article 16 of the (EU) 2017/460 of 16th March 2017.

This document sets out the proposals of the transmission system operator for each of these parameters, in accordance with the definitions considered in the Tariff Regulation for the gas sector, for the application of the ex-ante discount on the following points:

- VIP Ibérico;
- Interconnection between the high-pressure network and the LNG Terminal.

¹ As an alternative to applying ex-ante discount, as established in Article 16 (4) the National Regulatory Authority may decide to apply an ex-post discount, whereby network users are compensated after the actual interruptions incurred.

² Regulation n^o 825/2023 of 28th July.

2 Methodology

2.1 Probability of interruption

The probability of interruption must be calculated for each type of standard capacity product offered, for which the following equation shall apply, according to Article (16) of the (EU) 2017/460 of 16th March 2017:

$$Pro = \frac{N \times D_{int}}{D} \times \frac{CAP_{av.int}}{CAP} \quad (2)$$

- (N) is the expected number of interruptions over D;
- (D_{int}) is the average duration of expected interruptions (in hours);
- (D) is the total duration of the respective type of standard capacity product for interruptible capacity (in hours);
- (CAP_{av.int}) is the expected average amount of interrupted capacity for each interruption where such amount is related to the respective type of standard capacity product for interruptible capacity;
- (CAP) is the total amount of interruptible capacity for the respective type of standard interruptible capacity product.

2.1.1 Capacity Management in the interconnection points

In practice, when all firm capacity (where additional capacity is included) is contracted for a certain gas day, its underutilisation, either due to a low nomination or to a decrease in a renomination cycle, will produce an interruptible capacity, as shown in figure 1.

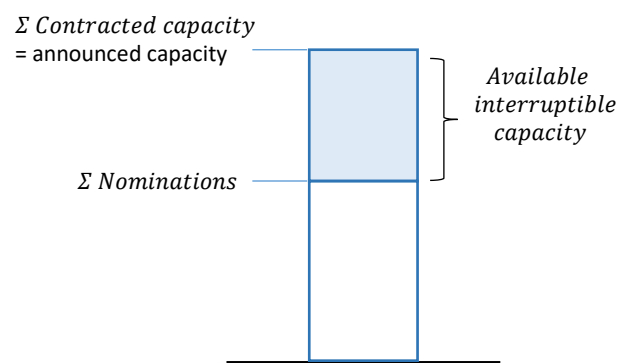


Figure 1: Schematic representation of the interruptible capacity provision mechanism

Such interruptible capacity may be contracted as shown in Figure 2, according to the rules defined in (EU) 2017/459 of 16th March 2017.

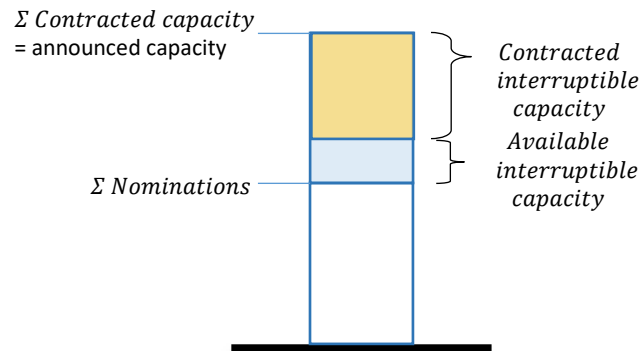


Figure 2: Schematic representation of the interruptible capacity contracting process

Under these circumstances, any further renominations for higher values within the respective firm capacity contracted, will imply a shortage on the previously announced interruptible capacity. This occurrence may affect the interruptible capacities that had already been assigned, and thus creating an interruption of capacity, as shown in Figure 3.

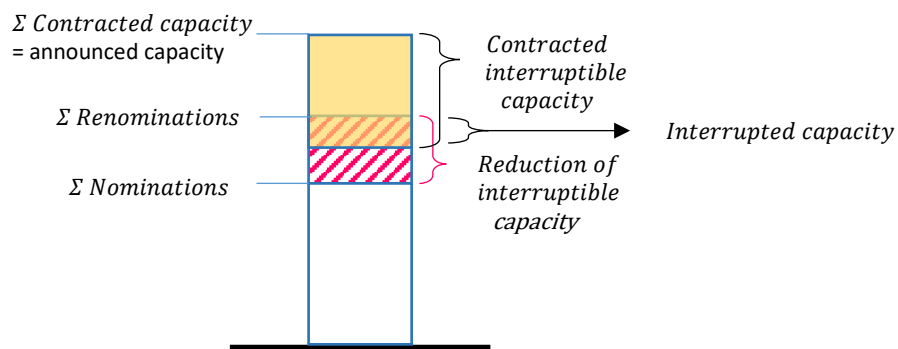


Figure 3: Schematic representation of the interruption of contracted interruptible capacity

2.1.2 Interruption of interruptible capacity

Interruptible capacity products may be offered when all firm capacity is contracted but is not being requested and thus not being used. This idle capacity, although eventually previously confirmed could be interrupted due to the subsequent renominations performed by the network users entitled to the corresponding firm capacity.

Assuming that the market's historical behaviour regarding the use of the contracted firm capacity has identical statistical significance in situations where the firm capacity is sold out, it is reasonable to accept that the probability of interruption of interruptible capacity on a given gas day results from the product between (i) the probability of contracting available interruptible capacity due to underuse of contracted firm capacity, illustrated in Figure 1, and (ii) the probability of reducing the available interruptible capacity (variation of use by renomination to a higher value), illustrated in Figure 3.

The following equation (3) shall apply:

$$\frac{N \times D_{int}}{D} = C \times PC(d) \times PR(d) \times R \quad (3)$$

- (C) - Ratio of the number of days on which interruptible capacity is expected to be contracted, in relation to the period considered.
- (PC(d)) - Probability of contracting a certain interruptible capacity on gas day d.
- (PR (d)) – Probability of reduction of a given interruptible capacity available on gas day d, obtained as a function of increases in the use of firm capacity in renomination processes occurring in a relevant historical period.
- (R) - Ratio of the number of days on which the increase in the use of firm capacity is expected in renomination processes, in relation to the period considered.

As it is not possible to measure the behaviour of the market when it is contracting interruptible capacity, it is assumed that the frequency of occurrences in the contracting interval PC(d) behaves identically to the frequency distribution found for PR(d).

It is considered that variable C is maximized to the unit value, in order to simplify the methodology and because, for the time being, there is not sufficient data available for its modelling.

2.2 Factor ‘A’

In accordance with the Article 154 of the Portuguese Tariff³ Regulation, Factor ‘A’ must reflect the estimated economic value of the type of standard capacity product for interruptible capacity, calculated for each, some or all interconnection points, and shall be no less than 1.

For the present analysis, it is appropriate to apply a unit value (A=1) to each of the standard capacity products for interruptible capacity at any of the interconnection points concerned.

³ Regulation n° 825/2023 of 28th July.

3 Analysis of the VIP Ibérico

3.1 Offer of standard capacity products for interruptible capacity

Regulation (EU) 2017/459, establishing a network code on capacity allocation mechanisms in gas transmission systems, requires transmission system operators to offer standard capacity products for interruptible capacity in VIP Ibérico according to the following:

- daily capacity product for interruptible capacity in both directions at interconnection points where the respective standard capacity product for firm capacity was sold out day-ahead or was not offered, to be allocated through an auction process;
- within-day capacity products for interruptible capacity, in both directions, shall only be allocated when firm capacity (additional capacity included), is sold out and shall be allocated through an over-nomination procedure.

These products shall be offered according to the rules defined in Regulation (EU) 2017/459, regarding capacity allocation mechanisms in gas transmission system.

3.2 Historical use of capacities

The virtual interconnection point, VIP Ibérico, had no interruption of interruptible capacity due to physical congestion during the period under analysis. The following graph, Figure 4, presents the utilisation of this interconnection point, in both directions, between October 2016 and September 2025, in which a positive flow corresponds to an entrance to the Portuguese system (flow direction from Spain to Portugal).

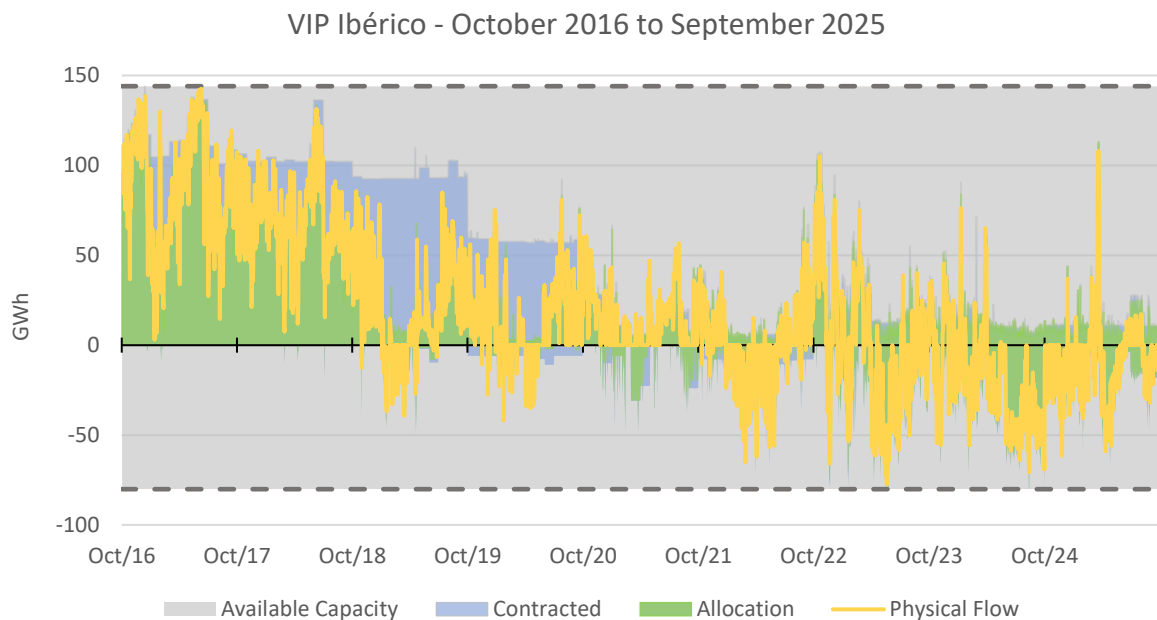


Figure 4: Use of capacities in VIP Ibérico between October 2016 and September 2025.

The following Tables (1 and 2) show the levels of contracting and utilisation of contracted capacities referred to the contracting of firm capacities in VIP Ibérico in biannual periods from October 2016 to September 2025.

- Direction Spain - Portugal

Table 1: Contracting capacities and utilisation of contracted capacity levels referred to firm capacities – SP -> PT

Biennium	% Contracted	% Utilised
2016/17 and 2017/18	76.92%	71.11%
2017/18 and 2018/19	69.46%	47.27%
2018/19 and 2019/20	53.00%	26.97%
2019/20 and 2020/21	27.29%	39.79%
2020/21 and 2021/22	11.66%	79.39%
2021/22 and 2022/23	14.46%	81.27%
2022/23 and 2023/24	15.23%	81.24%
2023/24 and 2024/25	10.93%	79.49%

- Direction Portugal - Spain

Table 2: Contracting capacities and utilisation of contracted capacity levels referred to firm capacities – PT -> SP

Biennium	% Contracted	% Utilised
2016/17 and 2017/18	0.12%	99.93%
2017/18 and 2018/19	3.59%	83.99%
2018/19 and 2019/20	9.24%	64.42%
2019/20 and 2020/21	12.74%	68.28%
2020/21 and 2021/22	17.83%	72.05%
2021/22 and 2022/23	27.10%	84.77%
2022/23 and 2023/24	37.02%	98.01%
2023/24 and 2024/25	34.30%	98.44%

Despite the increase in contracted capacity observed since 2016 in the export direction (from Portugal to Spain), it is still in the opposite direction (from Spain to Portugal), between 2016 to 2018, that the highest levels of contracting are observed, prone to higher dynamic renomination cycles, consistent with the assumptions of statistical significance underlying the methodology being applied. Therefore, the period between October 2016 and September 2018 is considered the relevant historical period that best characterizes the expected occurrence of interruption of interruptible capacity products for the gas year 2026/2027.

The following graphs (Figures 5 and 6) present the characterization of capacity utilization in the specified period, with daily and monthly detail.

VIP Ibérico (daily detail)

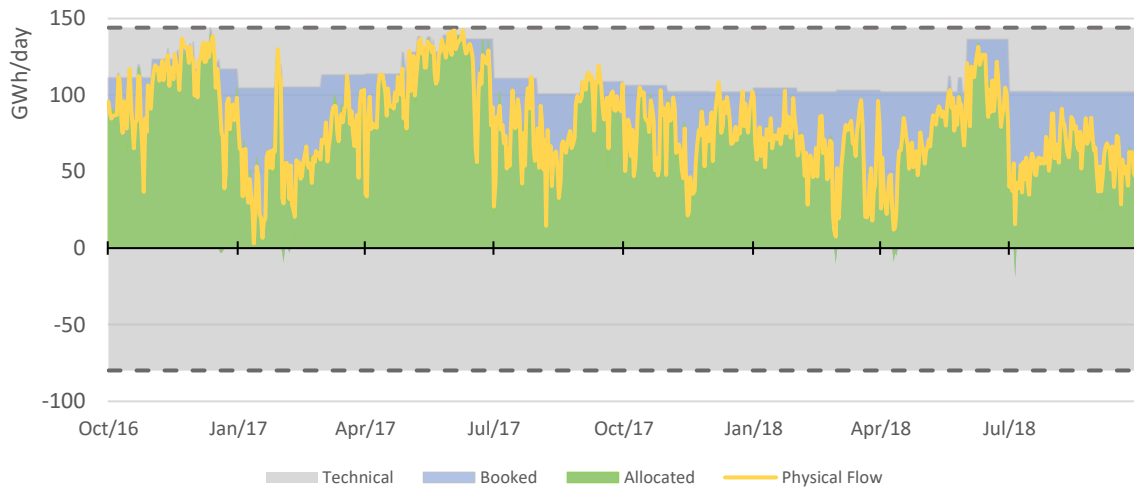


Figure 5: Utilization of capacities between October 2016 and September 2018.

VIP Ibérico - ES -> PT (monthly detail)

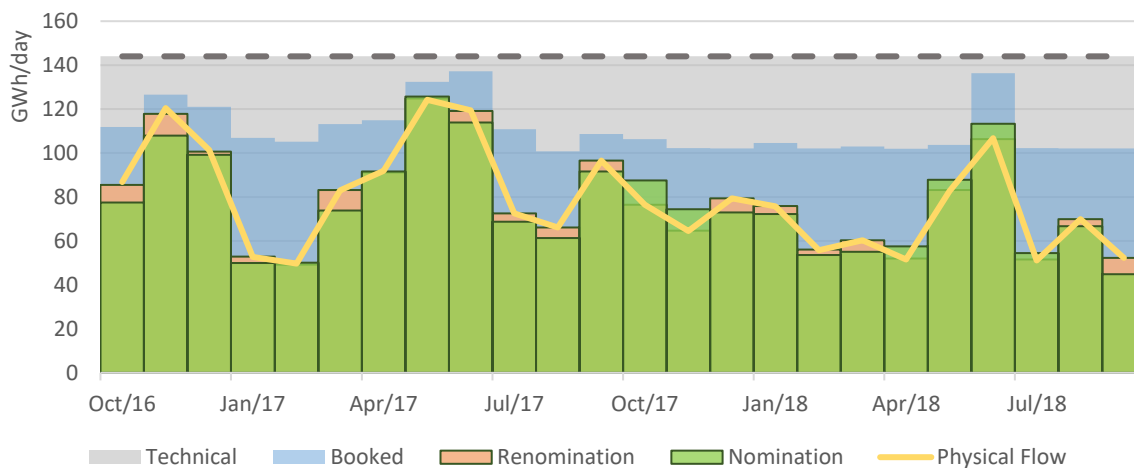


Figure 6: Average monthly use of capacities between October 2016 and September 2018. Renomination quantities above nominations displayed in orange; renomination quantities below nomination displayed in dark green.

3.3 Calculation of the probability of interruption for the period 2026/2027

Through the analyses of the increase in the use of capacity resulting from the renomination processes, it was possible to calculate the frequency of reduction applied to the interruptible capacity (referred to the available interruptible capacity), thus determining the distribution of reduction of this capacity, PR(d), expected on gas day d, as shown in Figure 7.

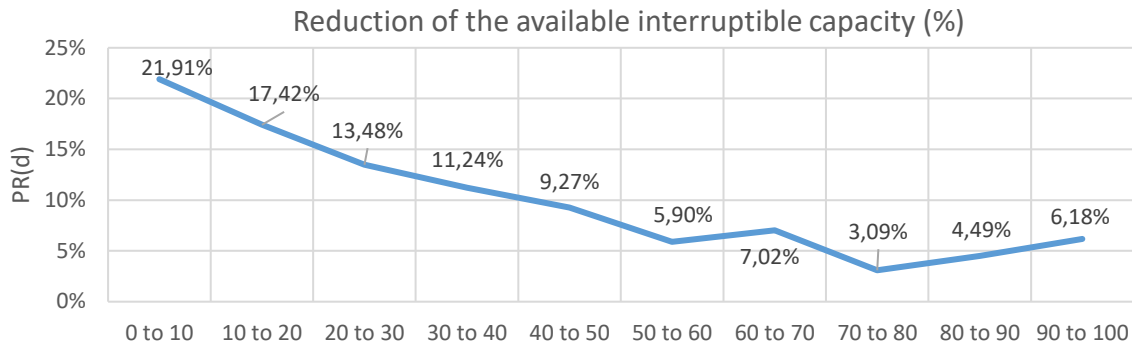


Figure 7: Reduction of interruptible capacity for each gas day PR(d)

As already mentioned in paragraph 2.1.2, it is assumed that the probability of contracting interruptible capacity, PC(d), presents the same distribution as the reduction of the available interruptible capacity, determined for PR(d), with the former competing with the latter in the reduction of this capacity, but in the opposite direction. The expected number of interruptions for each set of interruptible capacity reduction hypothesis by contracting, PC(d), and by renomination, PR(d), for each available interruptible capacity interval, is shown in the matrix in Table 3, by multiplying the second by the third term of the equation (3).

Table 3: Expected interruptions for each set of hypotheses of reduction of interruptible capacity, by contracting, PC(d), and by renomination, PR(d).

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		PR(d)									
PC(d)		21,91%	17,42%	13,48%	11,24%	9,27%	5,90%	7,02%	3,09%	4,49%	6,18%
90 to 100	6,18%	1,354%	1,076%	0,833%	0,694%	0,573%	0,365%	0,434%	0,191%	0,278%	0,382%
80 to 90	4,49%		0,783%	0,606%	0,505%	0,417%	0,265%	0,316%	0,139%	0,202%	0,278%
70 to 80	3,09%			0,417%	0,347%	0,286%	0,182%	0,217%	0,095%	0,139%	0,191%
60 to 70	7,02%				0,789%	0,651%	0,414%	0,493%	0,217%	0,316%	0,434%
50 to 60	5,90%					0,547%	0,348%	0,414%	0,182%	0,265%	0,365%
40 to 50	9,27%						0,547%	0,651%	0,286%	0,417%	0,573%
30 to 40	11,24%							0,789%	0,347%	0,505%	0,694%
20 to 30	13,48%								0,417%	0,606%	0,833%
10 to 20	17,42%									0,783%	1,076%
0 to 10	21,91%										1,354%

Example: If in a given time when there is available interruptible capacity, a level of contracting of this capacity occurs in the interval up to 10% (an event which has a probability of occurrence PC(d) = 21.91%), the reduction of interruptible capacity up to 90% cannot have any impact. Only when the level of reduction in the capacity level is in the 90 to 100% range (independent event with probability of occurrence PR(d) = 6.18%) will an interruption occur, with a 1.354% probability. The same interpretation should be made for each contracting interval, but for this purpose the accumulation of probabilities along the intervals of successively reduced capacities should be taken into account.

For each interval of available interruptible capacity, the quotient between the interruptible capacity hypothesis ($CAP_{av.int}$) and contracted interruptible capacity (CAP) is the interrupted contracted interruptible capacity. The matrix in Table 4 shows the contracted interruptible capacities likely to be interrupted for each

combination of the variables mentioned ($CAP_{av.int}$) and (CAP). With the definition of this variable, it will be possible to quantify the amount affected by each expected interruption record, from Table 3.

Table 4: Interrupted contracted interruptible capacity for each set of hypotheses of interrupted capacity ($CAP_{av.int}$) and contracted interruptible capacity (CAP): $CAP_{av.int} / CAP$

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		Interrupted Capacity (C)									
Contracted Interruptible Capacity (L)		5%	15%	25%	35%	45%	55%	65%	75%	85%	95%
90 to 100	95%	0%	11%	21%	32%	42%	53%	63%	74%	84%	95%
80 to 90	85%	0%	12%	24%	35%	47%	59%	71%	82%	94%	
70 to 80	75%	0%	13%	27%	40%	53%	67%	80%	93%		
60 to 70	65%	0%	15%	31%	46%	62%	77%	92%			
50 to 60	55%	0%	18%	36%	55%	73%	91%				
40 to 50	45%	0%	22%	44%	67%	89%					
30 to 40	35%	0%	29%	57%	86%						
20 to 30	25%	0%	40%	80%							
10 to 20	15%	0%	67%								
0 to 10	5%	0%									

Example: Each entry in the table results from the application of the following expression: $\text{Max}\{L+C-100\%;0\}/L$ - where "C" and "L" correspond to each value in the "interrupted capacity" column and to each value in the "contracted interruptible capacity" line, respectively. Applying the example described, "C" = 25%, "L" = 85%, and so the contracted interruptible capacity interrupted will be $\text{Max}\{85\%+25\%-100\%;0\}/85\% = 12\%$.

Taking as reference the days where the use of firm capacity increases in renomination processes, the probability of interruption will be obtained through the product of the probability of occurrence of an interruption ($CP(d) \times PR(d)$), from Table 3, by the contracted interruptible capacity affected, i.e. interrupted ($CAP_{av.int}/CAP$), referred to the available interruptible capacity (Table 4). The result of this operation is shown in Table 5.

Table 5: Product between the probability of occurrence of an interruption, $PC(d) \times PR(d)$ from Table 3, by the interrupted contracted interruptible capacity, $CAP_{av.int}/CAP$

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		Interrupted Capacity									
Interrupted Contracted Interruptible Capacity		5%	15%	25%	35%	45%	55%	65%	75%	85%	95%
90 to 100	95%	0,113%	0,175%	0,219%	0,241%	0,192%	0,274%	0,141%	0,234%	0,362%	
80 to 90	85%	0,071%	0,119%	0,147%	0,125%	0,186%	0,098%	0,166%	0,261%		
70 to 80	75%	0,046%	0,076%	0,073%	0,116%	0,064%	0,111%	0,178%			
60 to 70	65%	0,100%	0,127%	0,228%	0,134%	0,243%	0,401%				
50 to 60	55%	0,063%	0,151%	0,099%	0,193%	0,331%					
40 to 50	45%	0,145%	0,127%	0,278%	0,509%						
30 to 40	35%	0,099%	0,289%	0,595%							
20 to 30	25%	0,242%	0,667%								
10 to 20	15%	0,718%									
0 to 10	5%	0,9527%									
$\Sigma [PC(d) \times PR(d) \times CAP_{av,int}/CAP] =$										9,527%	

By applying the sum to the set of probability distributions calculated in the matrix presented in Table 5, it is possible to calculate the probability of interruption, considering the days of increase in firm capacity due to renomination processes as a reference. Since the probabilities calculated so far were determined in the scope of the ratio of available firm capacity increase in renomination processes, R , it is necessary to transpose this reality to the referential of the period considered in the study, applying the last term of equation (3). The value calculated for R for the period under consideration is 48.77%, resulting in a calculated PRO of

$$PRO = \Sigma \left[PC(d) \times PR(d) \times \frac{CAP_{av.int}}{CAP} \right] \times R = \mathbf{4.646\%},$$

being this the probability of interruption (PRO) that shall be considered, applied equally to both directions.

4 Analysis of the high-pressure network/LNG Terminal connection

4.1 Types of standard capacity products for interruptible capacity

According to *Manual de Procedimentos de Acesso às Infraestruturas do setor do gás natural*, published in Directive No. 07/2020, Procedure No. 4 establishes that the transmission system operator shall offer standard interruptible capacity products for:

- within-day interruptible capacity on regasification, in case all firm capacity, including additional capacity eventually offered, has been sold-out, to be confirmed through a renomination mechanism.

These products shall be offered according to the same rules that apply to VIP Ibérico, as defined in Regulation (EU) 2017/459, establishing capacity allocation mechanisms in gas system networks, applied to the regasification capacity.

4.2 Historical use of capacities

The following graph (Figure 8) presents the utilisation of the connection point between the high-pressure network and the LNG Terminal between October 2016 and September 2025.

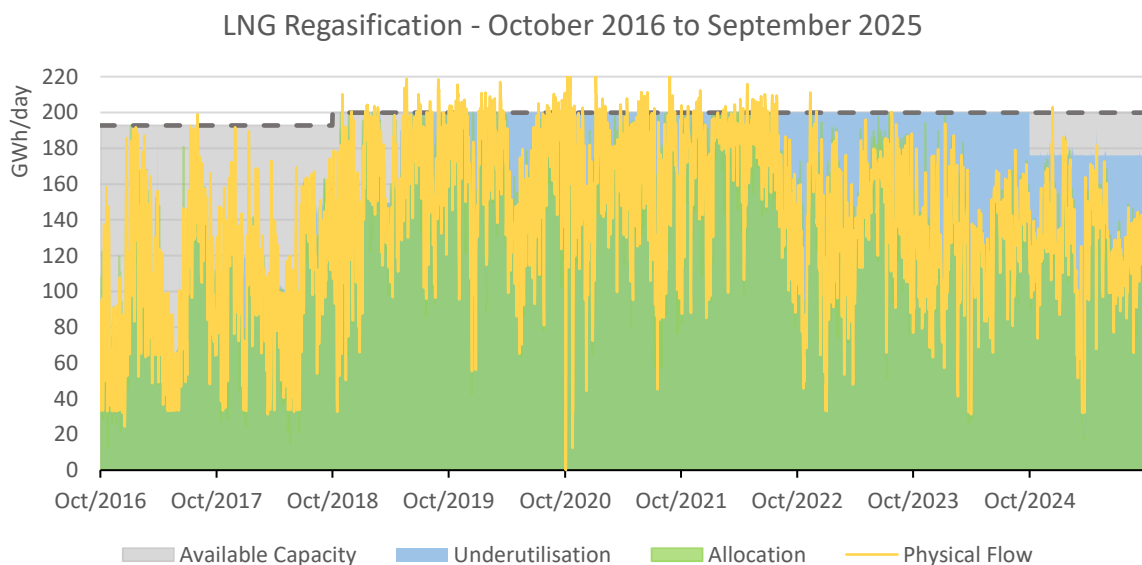


Figure 8: LNG Regasification between October 2016 and September 2025.

As a result of the renewed *Manual de Procedimentos de Acesso às Infraestruturas* for the gas sector, published on April 2020, interruptible capacity products started to be offered on October 2020. Contracting of this product has been registered between gas years 2020/21 and 2023/24 by overnomination mechanisms.

4.2.1 Evaluation of the total interrupted capacity

From the analysis of the capacity contracting and capacity interruption processes of interruptible capacity, the following data, presented in Table 6, were obtained.

Table 6: Contracting capacities and utilisation of contracted capacity levels referred to firm capacities – Regasification

	2020/21	2021/22	2022/23	2023/24	2024/25
Contracted by overnomination	930.0 GWh	88.4 GWh	108.6 GWh	35.0 GWh	0 GWh
Interrupted capacity due to renomination	76.7 GWh	1.3 GWh	0 GWh	0 GWh	0 GWh
Percentage of interruption	8.2%	1.5%	0%	0%	0%

It is concluded that the contracted interruptible capacity has been decreasing over the last gas years, reaching a null value in 2024/25. This trend is also reflected in the evolution of interrupted capacity over recent gas years, declining from approximately 8% in gas year 2020/21 to 0% of the total contracted interruptible capacity from 2022/23 onwards.

4.2.2 Determination of the reference period

The following table shows the levels of contracting and utilisation of contracted capacities referred to the contracting of firm capacities in VIP Ibérico in biannual periods from October 2016 to September 2025.

Table 7: Contracting capacities and utilisation of contracted capacity levels referred to firm capacities – Regasification

Biennium	% Contracted	% Utilised
2016/17 and 2017/18	55.86%	92.09%
2017/18 and 2018/19	74.61%	89.29%
2018/19 and 2019/20	94.65%	87.06%
2019/20 and 2020/21	100.00%	82.89%
2020/21 and 2021/22	100.00%	84.52%
2021/22 and 2022/23	100.00%	79.37%
2022/23 and 2023/24	100.00%	67.39%
2023/24 and 2024/25	94.15%	67.18%

Market participants' interest in supplying their customers through LNG increased during the 2019/20 and 2020/21 gas year, with the market successively contracting greater capacity and for longer durations, culminating in the full allocation of capacity for gas year 2019/20. Since then and up to gas year 2023/24, this scenario has remained unchanged, with demand for regasification capacity during the annual capacity auction reaching 100% of the announced technical capacity. However, a change in this trend was observed in gas year 2024/25, with demand for this product on an annual horizon falling below the available capacity, resulting in a contracted capacity percentage below 100% in the last biennium covered by the analysis period, specifically 94.15%.

Throughout this period, the utilization of regasification capacity has decreased, with the last two biennia showing stabilization at around 67%. The reduction in consumption recorded in the high-pressure network throughout this period contributed to the decrease in regasification capacity utilization. However, the stabilization observed in utilization levels during the most recent biennia was only possible due to the increase in physical export flows, reflected in the continued use of the Iberian VIP in the Portugal–Spain direction, together with a reduction in utilization in the opposite direction, Spain–Portugal. Latterly, the increase in consumption by combined-cycle power plants should also be highlighted, as it has partially offset the decline in consumption observed in other sectors. Despite these developments, the TGNL continues to play a predominant role in the supply of the National Gas System.

Despite the slight reduction in the percentage of contracted capacity, the level of contracting remained considerably high during the latest biennium, prone to higher dynamic renomination cycles. Considering the downward trend in the contracting of interruptible capacity, culminating in a null value for gas year 2024/25, together with the reduction in capacity interruptions recorded over the last five gas years — particularly the absence of interrupted capacity during the last three gas years (as presented in Section 4.2.1) — as well as the stabilization of regasification capacity utilization percentages in recent biennia, the need to incorporate more recent data into this model remains valid, along with the assumptions adopted for calculating the interruption probability for gas year 2025/26. Accordingly, this model will incorporate data that more accurately reflect the expected utilization outlook for this capacity in the coming years, considering the biennium 2023/24 and 2024/25 as the reference period for the application of the methodology used.

The following graphs (Figures 9 and 10) present the levels of contracting and utilization of regasification capacity between October 2023 and September 2025.

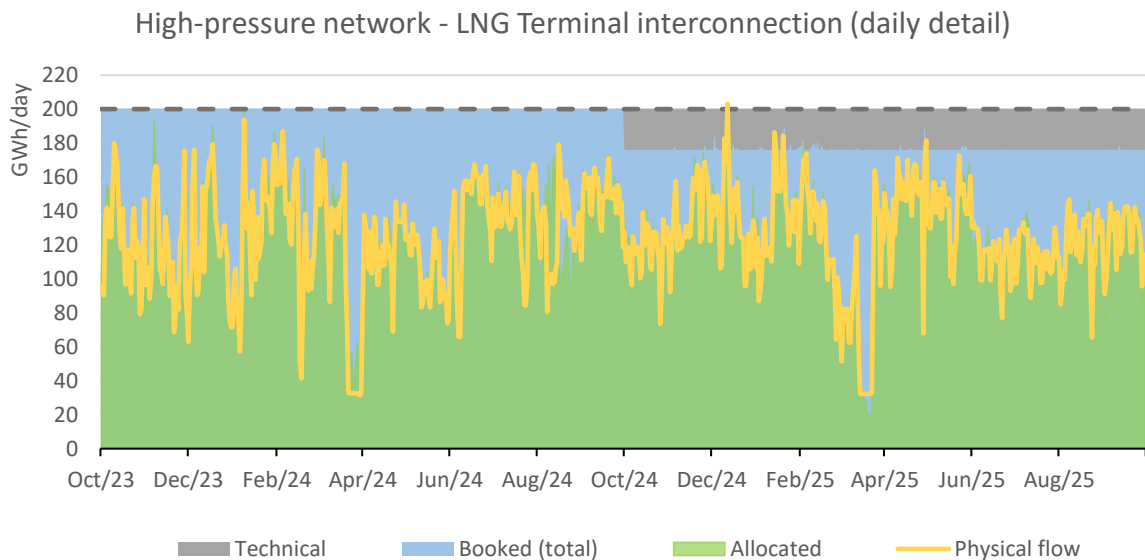


Figure 9: Capacity utilisation during the reference period (2023/24 and 2024/25).

As can be seen on the previous graph, there were a few days when the physical flow was greater than the available capacity. These values correspond to a TSO’s management choice resulting from the operating conditions verified in the high-pressure network, LNG Terminal and storage infrastructures.

High-pressure network - LNG Terminal interconnection (monthly detail)

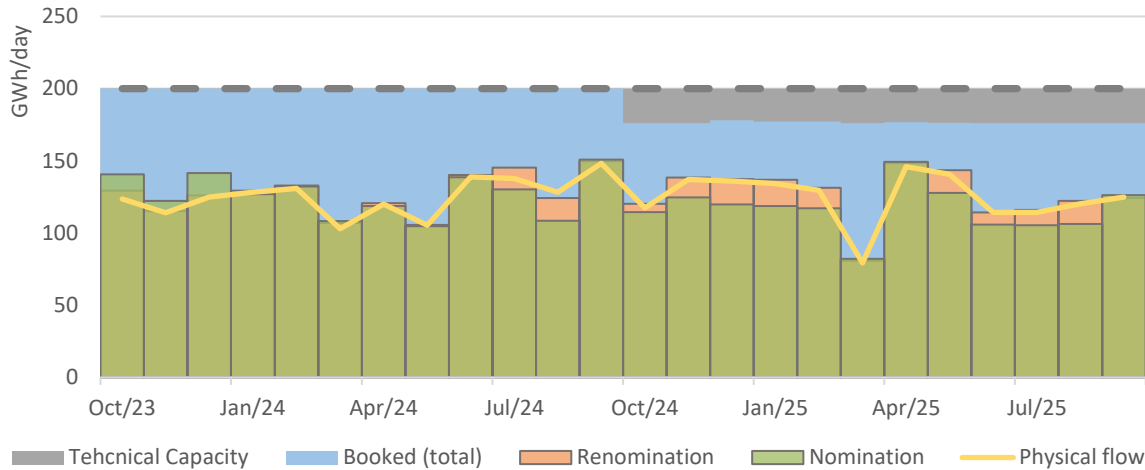


Figure 10: Monthly average capacity utilisation during the reference period (2023/24 and 2024/25). Renomination quantities to superior values displayed in orange.

4.3 Calculation of probability of interruption for 2026/27

By analysing the history of occurrences of capacity utilisation increase due to renomination, registered in the biennium 2023/24 and 2024/25, it was possible to calculate the frequency of interruptible capacity reduction experienced, determining the distribution of this capacity reduction, PR(d), expected on gas day d, as shown in Figure 11.

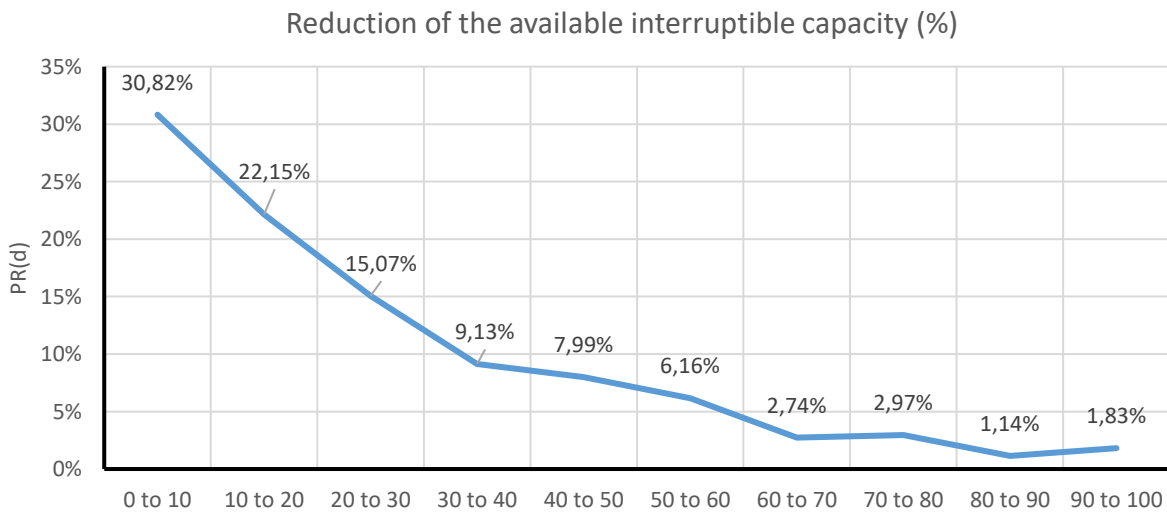


Figure 11: Reduction of interruptible capacity expected for each gas day PR(d)

As already mentioned in 2.1.2, it is assumed that the probability of contracting interruptible capacity, $PC(d)$, presents the same distribution as the reduction in available interruptible capacity, determined for $PR(d)$, with the former competing with the latter in the reduction of this capacity, but in opposite directions.

The expected number of interruptions for each set of interruptible capacity reduction hypothesis by contracting, $PC(d)$, and by renomination, $PR(d)$, for each available interruptible capacity interval, is shown in the matrix in Table 8, by multiplying the second by the third terms of equation (3).

Table 8: Interruptions expected for each set of hypotheses of reduction of interruptible capacity, contracted, $PC(d)$, and renominated, $PR(d)$

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		PR(d)									
PC(d)		30,82%	22,15%	15,07%	9,13%	7,99%	6,16%	2,74%	2,97%	1,14%	1,83%
90 to 100	1,83%	0,563%	0,404%	0,275%	0,167%	0,146%	0,113%	0,050%	0,054%	0,021%	0,033%
80 to 90	1,14%		0,253%	0,172%	0,104%	0,091%	0,070%	0,031%	0,034%	0,013%	0,021%
70 to 80	2,97%			0,447%	0,271%	0,237%	0,183%	0,081%	0,088%	0,034%	0,054%
60 to 70	2,74%				0,250%	0,219%	0,169%	0,075%	0,081%	0,031%	0,050%
50 to 60	6,16%					0,493%	0,380%	0,169%	0,183%	0,070%	0,113%
40 to 50	7,99%						0,493%	0,219%	0,237%	0,091%	0,146%
30 to 40	9,13%							0,250%	0,271%	0,104%	0,167%
20 to 30	15,07%								0,447%	0,172%	0,275%
10 to 20	22,15%									0,253%	0,404%
0 to 10	30,82%										0,563%

No interruption:
 $PC(d) \times PR(d) = 0$

Example: if in a given time when there is interruptible capacity available, a level of contracting of this capacity occurs in the interval of up to 10% (an event which has a probability of occurrence $PC(d) = 30.82\%$), the reduction of interruptible capacity up to 90% cannot have any impact. Only when the level of reduction in the capacity level is in the 90 to 100% range (independent event with probability of occurrence $PR(d) = 1.83\%$) will an interruption occur, with a 0.563% probability. The same interpretation should be made for each contracting interval, but for this purpose, the accumulation of probabilities along the intervals of successively reduced capacities should be taken into account.

For each interval of available interruptible capacity, the quotient between the interruptible capacity hypothesis ($CAP_{av.int}$) and contracted interruptible capacity (CAP) is the interrupted contracted interruptible capacity. The matrix in Table 9 shows the contracted interruptible capacities likely to be interrupted for each combination of the variables mentioned, $CAP_{av.int}$ and CAP . With the definition of this variable, it will be possible to quantify the quantity affected by each expected interruption record, from Table 8.

Table 9: Interruption of contracted interruptible capacity for each set of hypotheses of interrupted capacity ($CAP_{av.int}$) and contracted interruptible capacity (CAP): $CAP_{av.int}/CAP$.

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		Interrupted Capacity (C)									
Contracted Interruptible Capacity (L)		5%	15%	25%	35%	45%	55%	65%	75%	85%	95%
90 to 100	95%	0%	11%	21%	32%	42%	53%	63%	74%	84%	95%
80 to 90	85%	0%	12%	24%	35%	47%	59%	71%	82%	94%	
70 to 80	75%	0%	13%	27%	40%	53%	67%	80%	93%		
60 to 70	65%	0%	15%	31%	46%	62%	77%	92%			
50 to 60	55%	0%	18%	36%	55%	73%	91%				
40 to 50	45%	0%	22%	44%	67%	89%					
30 to 40	35%	0%	29%	57%	86%						
20 to 30	25%	0%	40%	80%							
10 to 20	15%	0%	67%								
0 to 10	5%	0%									

Example: Each entry in the table results from the application of the following expression: $\text{Max}\{L+C-100\%;0\}/L$ - where "C" and "L" correspond to each value in the "interrupted capacity" column and to each value in the "contracted interruptible capacity" line, respectively. Applying the example described, "C" = 25%, "L" = 85%, and so the contracted interruptible capacity interrupted will be $\text{Max}\{85\%+25\%-100\%;0\}/85\% = 12\%$.

Considering as reference the days where the use of firm capacity increases in renomination processes, the probability of interruption will be obtained through the product of the probability of an interruption occurrence ($PC(d) \times PR(d)$), from Table 8, by the contracted interruptible capacity affected, i.e., interrupted ($CAP_{av.int}/CAP$), against the available interruptible capacity (Table 9). The result of this operation is shown in Table 10.

Table 10: Product between the probability of occurrence of an interruption, $PC(d) \times PR(d)$ in Table 8, by the interrupted contracted interruptible capacity, $CAP_{av.int}/CAP$

		0 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	90 to 100
		Interrupted Capacity (C)									
Interrupted contracted interruptible capacity		5%	15%	25%	35%	45%	55%	65%	75%	85%	95%
90 to 100	95%	0,043%	0,058%	0,053%	0,061%	0,059%	0,032%	0,040%	0,018%	0,032%	
80 to 90	85%	0,020%	0,025%	0,032%	0,033%	0,018%	0,024%	0,011%	0,020%		
70 to 80	75%	0,036%	0,063%	0,073%	0,043%	0,059%	0,027%	0,051%			
60 to 70	65%	0,034%	0,052%	0,035%	0,050%	0,024%	0,046%				
50 to 60	55%	0,069%	0,061%	0,100%	0,051%	0,102%					
40 to 50	45%	0,049%	0,105%	0,061%	0,130%						
30 to 40	35%	0,077%	0,060%	0,143%							
20 to 30	25%	0,069%	0,220%								
10 to 20	15%	0,270%									
0 to 10	5%										
$\Sigma [PC(d) \times PR(d) \times CAP_{av.int}/CAP] =$										2,737%	

By applying the sum to the set of probability distributions calculated in the matrix in Table 10, it is possible to calculate the probability of interruption, considering the days of increase in firm capacity due to renomination processes as a reference. Since the probabilities calculated so far were determined in the scope of the ratio of firm capacity increases in renomination processes, R , it is necessary to transpose this reality to the referential of the considered period, applying the last term of equation (3). The R value calculated for the period under consideration is 59.92%, resulting in a calculated PRO of:

$$PRO = \Sigma \left[PC(d) \times PR(d) \times \frac{CAP_{av.int}}{CAP} \right] \times R = \mathbf{1.640\%}$$

5 Conclusions

Considering the application of an ex-ante discount when determining tariffs for interruptible capacity in the 2026/2027 gas year, the transmission system operator submits a reasoned proposal for the parameters set out in the Tariff Regulations for the gas sector. These parameters are: (i) the probability of interruption of interruptible capacity (Pro); (ii) adjustment factor to the estimated economic value of the type of product (A).

In the study regarding the determination of the probability, a common methodology was applied both to VIP Ibérico and to the high-pressure network and LNG Terminal interconnection. This option was based on the fact that, in both cases, the offer of interruptible capacity and the respective interruption results from the nomination behaviour and subsequent renomination, regarding the specificities in the use of the infrastructures in each point. This approach incorporates quantitative elements of the use of the respective points during a historically relevant period, considering for this purpose the biennium with the highest level of contracting.

Apropos of the high-pressure network and LNG Terminal interconnection, the last biennium saw a slight decrease in contracted capacity levels, marking the first period in many years in which available firm capacity was not fully booked, although the level of utilization remained significantly high (see Table 7). The downward trend in actual capacity interruptions observed over the last five gas years (see Table 6), which has since stabilized at zero actual interruption, together with the lower utilization of the regasification product, also reflected in the lower level of capacity booking, had already motivated, in the previous year, the need to consider more recent data for this product, based on the premise that such data more accurately reflect current market conditions and the utilization of the infrastructure in the foreseeable future.

This approach intended to prevent a crystallization of the probability of interruption value at this interconnection point, intrinsically associated with a biennium of high use of the LNG Terminal regasification product, in dissonance with the current trend.

Hence, and applying the methodology that has been followed in recent years, the interruption probability value is weighted based on the historical data from the most recent biennium (1.640%) and the value proposed in the previous year and approved by the NRA (7.631%), thereby providing greater stability to the discount rate applicable in the following year. This safeguards the model from significant fluctuations, while still taking into account the evolving market conditions regarding the use of this product. The application of this weighting would result in a proposal for the 2026/27 year equal to the average of these two values: 4.636%.

However, upon analysing the obtained result and comparing it with the interruption probability value determined for the Iberian VIP point, it is observed that both values are very similar, with the latter even being slightly higher, thus prompting further reflection on the value to be proposed. The data presented throughout this document clearly demonstrates the importance of regasification for the supply of the National Gas System, as reflected in the high levels of capacity booking and utilization recorded in recent biennia. These naturally entail a higher risk of capacity interruption, a situation that has already occurred in recent gas years (see Table 6), in contrast with the Iberian VIP point, where no interruption of capacity has been registered. Therefore, the similarity between the calculated values is not consistent with the nature of the utilization of these two interconnection points with the high-pressure network.

Additionally, it should be noted that the expected utilization of the high-pressure network and LNG Terminal interconnection point for gas year 2026/27 is similar to that of the current gas year.

For the reasons set out above, it is proposed to maintain the regasification value proposed in the previous year and approved by the NRA (7.631%).

For the purposes of the proposal for factor 'A', it was considered appropriate to maintain the application of a unit value (A=1) to each of the standard interruptible capacity products at any of the entry and exit points of the transport network in question, considering as neutral the variation in the economic value of each product in relation to the respective probability values determined by the methodology. The following table presents the transmission network operator's proposal for the aforementioned parameters, offering a comparison with the discount values approved by the NRA for the gas year 2025/26:

Table 10: Probability of capacity interruption and ex-ante discount proposal for 2026/27

Interconnection points with High-Pressure Network	Product	Probability 2025/26	Proposal to 2025/26 (approved by the NRA)	Probability 2026/27	Proposal to 2026/27
VIP Ibérico (Spain-Portugal)	Daily	4.646 %	4.646 %	4.646 %	4.646 %
	Within-Day				
VIP Ibérico (Portugal-Spain)	Daily	4.646 %	4.646 %	4.646 %	4.646 %
	Within-Day				
Interconnection with LNG Terminal (Regasification)	Within-Day	1.752 %	7.631 %	1.640 %	7.631 %

Appendix A - Interruptible regasification capacity available in 2024/25

During the gas year 2024/25, 283 GWh of interruptible capacity on the high-pressure network/LNG Terminal interconnection (regasification) was made available, which represents a decrease of almost 99% comparatively to the previous gas year (in which 26.78 TWh were offered) and corresponds to around 0.4% of the total firm capacity available to the market. This data is coherent with an inferior utilization of this product, as identified in 4.2.2. In monthly terms, the distribution of interruptible capacity relative to firm available capacity is as presented in the following table.

Table A1: Monthly available capacities: firm and interruptible

Month	Available firm capacity [GWh]	Available interruptible capacity [GWh]
October 2024	6 200	0
November 2024	6 000	30
December 2024	6 200	35
January 2025	6 000	114
February 2025	5 600	83
March 2025	6 200	0
April 2025	6 000	21
May 2025	6 200	0
June 2025	6 000	0
July 2025	6 200	0
August 2025	6 200	0
September 2025	6 000	0
TOTAL	72 800	283

No interruptible capacity was contracted during the analysed period.